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PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No. : 10/707,469 Confirmation No. **1468**  
Filing date: : December 16, 2003  
Applicant : Ramgopal Darolia et al.  
Art Unit: : 1792  
Examiner : Elizabeth A. Burkhart

Docket No. : 13DV-14273  
Customer No. : 30952

Commissioner for Patents  
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**REPLY BRIEF UNDER 37 CFR §41.41**

This is a Reply Brief to the Examiner's Answer dated October 2, 2008, which was filed in response to Appellants' Appeal Brief filed August 8, 2008. As stated in Appellants' Appeal Brief and acknowledged in the Examiner's Answer, the present appeal is directed to claims 1-20, 33 and 34 of the above-identified patent application. A correct copy of the rejected claims was previously set forth in the Claim Appendix of Appellants' Appeal Brief, and therefore is not provided herewith.

Application No. 10/707,469  
Technology Center 1792  
Reply Brief dated December 2, 2008  
In Reply to Examiner's Answer dated October 2, 2008

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### **STATUS OF CLAIMS**

Claims 1-32 were originally presented in this application. Claims 33-34 were introduced by an amendment filed August 16, 2007. Of these claims:

Claims 21-32 have been canceled;

Claims 1-20, 33 and 34 remain pending in the application, are rejected, and are the subject of this appeal.

**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

A concise statement of each ground of rejection presented for review follows:

Whether Claims 1-20, 33, and 34 are patentable over the combination of U.S. Published Patent Application No. 2002/0172838 to Rigney et al. ("Rigney ('838)" or the "Rigney Application") and U.S. Patent No. 6,492,038 to Rigney et al. ("Rigney ('038)" or the "Rigney Patent") under 35 USC §103.

### **ARGUMENT**

The Examiner's Answer does not appear to contain any new grounds of rejection, and the "Grounds for Rejection" (Section 9) of the Examiner's Answer appears to be consistent in scope with the grounds set forth in the final rejection dated October 16, 2007 (Paper No. 20071010). Therefore, the following is limited to responding to statements made in the "Response to Argument" (Section 10) of the Examiner's Answer.

On page 6 of the Examiner's Answer, the following argument is made:

Rigney ('038) provides reasonable motivation for intentionally oxidizing a metal vapor such that a metal oxide is co-deposited as discussed above.

Examiner's Answer at page 6, lines 18-20.

The motivation referred to as "discussed above" is believed to be in the preceding paragraph on page 6 of the Examiner's Answer, in which the Examiner argues

the combination of Rigney ('038) and Rigney ('838) would reasonably suggest evaporating an ingot containing YSZ and metal carbide by electron beam (sufficient to dissociate metal carbide) to incorporate carbide precipitates into the coating to allow for thinner TBC coatings, wherein a suitable supply of oxygen may be provided which would oxidize the dissociated metal vapor to incorporate a metal oxide in the coating to reduce thermal conductivity.

Examiner's Answer at page 6, lines 9-14.

This argument is based on the supposition that there is motivation for a YSZ coating to contain both an oxide and a carbide of a metal. However, Rigney ('038) is limited to a YSZ coating containing a carbide and Rigney ('838) is limited to a YSZ coating containing a third oxide (in addition to yttria and zirconia), and nothing in Rigney ('038) or Rigney ('838) suggests that the benefits of either additive would be retained if a carbide and third oxide were both present in a YSZ coating.

This argument is also based on the supposition that "a suitable supply of oxygen is provided." However, Rigney ('038) only mentions "backfilling the chamber with oxygen" when discussing the prior art (column 5, lines 30-41). Oxygen is not mentioned when describing the coating process of Rigney ('038) (column 5, lines 41-56). Instead, Rigney ('038) teaches "the

introduction of a carbon . . . gas into the coating chamber,” which at best would suggest a reduction in the partial pressure of oxygen in the coating chamber and available to “oxidize the dissociated metal vapor.” Such a result favors the deposition of carbides which, by no coincidence, is the very intent of Rigney ('038).

In response to Appellants' argument that

Rigney ('038) clearly does not teach the thermodynamic conditions (sufficient oxygen within the vapor cloud) required to intentionally oxidize the metal of the carbide compound and it would have been counterproductive to the very thing Rigney ('038) desires to deposit: carbide precipitates.

Examiner's Answer at page 6, lines 15-18.

the Examiner's explained

This would not have been counterproductive to the desires of Rigney ('038) because at least a portion of the metal dissociated would have been expected to reform carbide precipitates with the dissociated carbon depending on the amount of oxygen provided to the chamber, especially since Rigney ('038) discloses that the carbide precipitates may be formed in an oxygen containing atmosphere.

Examiner's Answer at page 6, line 20 through page 7, line 2.

Appellants respectfully disagree. First, as noted above, Rigney ('038) does not mention whether "the carbide precipitates may be formed in an oxygen containing atmosphere" (again, see Rigney ('038) at column 5, lines 41-56). Second, if the desire of Rigney ('038) is to deposit carbides (as the Examiner admits), then anything that reduces the amount of deposited carbides is clearly counterproductive, i.e., contrary to the teachings of Rigney ('038).

**CLOSING**

With these additional remarks, Appellants again respectfully request that this Honorable Board reverse the final rejection under 35 USC §103.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Domenica N.S. Hartman". The signature is fluid and cursive, with the first name "Domenica" written in a larger, more prominent script than the last name "Hartman".

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